

Amendment and Response

Applicant: Christopher L. Coleman

Serial No.: 10/607,655

Filed: July 23, 2004

Docket No.: 10030279-1

Title: DIFFRACTIVE OPTICAL ELEMENT WITH ANTI-REFLECTION COATING

REMARKS

The following remarks are made in response to the Non-Final Office Action mailed July 23, 2004. In that Office Action, the Examiner rejected claims 1-4, 7, 8, 16-18, and 20 under 35 U.S.C. §102(e) as being anticipated by Unno et al., U.S. Patent No. 6,641,985 ("Unno"). Claim 5 was rejected under 35 U.S.C. §103(a) as being unpatentable over Unno in view of Tran et al., U.S. Patent No. 5,853,960 ("Tran"). Claims 6, 9-11, 15, and 19 were rejected under 35 U.S.C. §103(a) as being unpatentable over Unno. Claims 12-14 were rejected under 35 U.S.C. §103(a) as being unpatentable over Unno (as applied to claim 9 above), and further in view of Tran.

With this Response, claim 6 has been cancelled, claims 1 and 16 have been amended, and claims 21-24 have been added. Claims 1-5 and 7-24 remain pending in the application and are presented for reconsideration and allowance.

35 U.S.C. §102 Rejections

The Examiner rejected claims 1-4, 7, 8, 16-18, and 20 under 35 U.S.C. §102(e) as being anticipated by Unno et al., U.S. Patent No. 6,641,985 ("Unno"). Independent claim 1 has been amended herein to include language from claim 6, and recites "an anti-reflection coating formed on the surface relief pattern by a directional deposition technique". The Examiner has acknowledged with respect to claim 6 that "Unno et al does not teach explicitly that the anti-reflective coating is *deposited directionally* via the deposition process such as sputtering." (Office Action at para. no. 5, page 4) (emphasis in original). However, the Examiner stated that:

Unno et al *does teach* explicitly that the underlying layer film (12) that is dielectric in nature can be deposited on the substrate using *directionally selective deposition* process via *sputtering* system, (please see Figure 2 and column 4, lines 27-37, and 55-64). It would then have been obvious to one skilled in the art to apply the explicitly teachings of deposition process and system disclosed by Unno et al to also carry out the deposition of the antireflective coating for the benefit of using the same and conventional arrangement to form the coating to save manufacturing cost. (Office Action at para. no. 5, page 4) (emphasis in original).

There is no teaching or suggestion in Unno that the deposition process for the underlying film 12 could or should be used for depositing the antireflective film 22 shown in

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Figure 3, or the antireflective films 23 and 24 shown in Figure 4. The antireflective films 22, 23, and 24 use different materials than the underlying film 12, and there is no teaching or suggestion in Unno regarding saving manufacturing costs by using the same process for all deposited films. Further, Unno discloses that the deposition process for the underlying film 12 corrects the errors or irregular pattern of the substrate by “planarizing” the irregular pattern. (See, e.g., Unno at col. 3, lines 12-13; col. 4, line 61, to col. 5, line 2). This disclosure teaches away from claim 1, which recites that the coated surface relief pattern has substantially the same dimensions as the underlying surface relief pattern. Unno does not teach or suggest “an anti-reflection coating formed on the surface relief pattern by a directional deposition technique”, as recited in independent claim 1, as amended.

In view of the above, Unno does not teach or suggest each and every limitation of independent claim 1. The Applicant respectfully requests removal of the rejection of claim 1 under 35 U.S.C. § 102(e), and requests allowance of this claim. Since dependent claims 2-4, 7, and 8 further limit patentably distinct claim 1, claims 2-4, 7, and 8 are believed to be allowable over the cited reference, and allowance of claims 2-4, 7, and 8 is respectfully requested.

Independent claim 16, as amended herein, includes the limitation “the substrate configured to focus infrared light”. There is no teaching or suggestion in Unno that the diffractive optical element disclosed therein is configured to focus infrared light. To the contrary, Unno discloses that a wavelength, λ , of 248 nanometers is used, which is outside of the infrared spectrum. (See, e.g., Unno at col. 5, lines 5, 38, and 48).

In view of the above, Unno does not teach or suggest each and every limitation of independent claim 16, as amended. The Applicant respectfully requests removal of the rejection of claim 16 under 35 U.S.C. § 102(e), and requests allowance of this claim. Since dependent claims 17, 18, and 20 further limit patentably distinct claim 16, claims 17, 18, and 20 are believed to be allowable over the cited reference, and allowance of claims 17, 18, and 20 is respectfully requested.

35 U.S.C. §103 Rejections

The Examiner rejected claim 5 under 35 U.S.C. §103(a) as being unpatentable over Unno in view of Tran et al., U.S. Patent No. 5,853,960 (“Tran”). Claim 5 is dependent on

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independent claim 1. As described above with respect to claim 1, Unno does not teach or suggest “an anti-reflection coating formed on the surface relief pattern by a directional deposition technique”, as recited in independent claim 1. Tran also does not teach or suggest this limitation of claim 1. In view of the above, dependent claim 5, which further limits patentably distinct claim 1, is believed to be allowable over the cited references, and allowance of claim 5 is respectfully requested.

The Examiner rejected claims 6, 9-11, 15, and 19 under 35 U.S.C. §103(a) as being unpatentable over Unno. With this Response, Applicant has cancelled claim 6, and incorporated language from claim 6 into independent claim 1, which was addressed above.

Independent claim 9 includes the limitation “directionally depositing an anti-reflection coating on the surface relief pattern, thereby substantially maintaining dimensions of the surface relief pattern.” As described above with respect to claim 1, Unno does not teach or suggest “an anti-reflection coating formed on the surface relief pattern by a directional deposition technique”, as recited in independent claim 1, as amended. For the reasons set forth above with respect to claim 1, Unno also does not teach or suggest “directionally depositing an anti-reflection coating on the surface relief pattern, thereby substantially maintaining dimensions of the surface relief pattern”, as recited in independent claim 9.

In view of the above, Unno does not teach or suggest each and every limitation of independent claim 9. The Applicant respectfully requests removal of the rejection of claim 9 under 35 U.S.C. § 103(a), and requests allowance of this claim. Since dependent claims 10, 11, and 15 further limit patentably distinct claim 9, claims 10, 11, and 15 are believed to be allowable over the cited reference, and allowance of claims 10, 11, and 15 is respectfully requested.

Dependent claim 19 is dependent on independent claim 16. As described above with respect to claim 16, there is no teaching or suggestion in Unno that the diffractive optical element disclosed therein is configured to focus infrared light as recited in independent claim 16, as amended. In view of the above, since dependent claim 19 further limits patentably distinct claim 16, claim 19 is believed to be allowable over the cited reference, and allowance of claim 19 is respectfully requested.

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The Examiner rejected claims 12-14 under 35 U.S.C. §103(a) as being unpatentable over Unno (as applied to claim 9 above), and further in view of Tran. Dependent claims 12-14 are dependent on independent claim 9. As described above with respect to independent claim 9, Unno does not teach or suggest “directionally depositing an anti-reflection coating on the surface relief pattern, thereby substantially maintaining dimensions of the surface relief pattern”, as recited in claim 9. Tran also does not teach or suggest this limitation of claim 9. In view of the above, since dependent claims 12-14 further limit patentably distinct claim 9, claims 12-14 are believed to be allowable over the cited references, and allowance of claims 12-14 is respectfully requested.

Newly Submitted Claims

With this Amendment, Applicant has submitted new dependent claims 21-24. Claims 21-24 are dependent on independent claim 16. As described above with respect to independent claim 16, there is no teaching or suggestion in Unno that the diffractive optical element disclosed therein is configured to focus infrared light as recited in claim 16. In view of the above, since dependent claims 21-24 further limit patentably distinct claim 16, and are further distinguishable over the cited prior art, claims 21-24 are believed to be allowable over the cited references, and allowance of claims 21-24 is respectfully requested.

CONCLUSION

In view of the above, Applicant respectfully submits that pending claims 1-5 and 7-24 are in form for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 1-5 and 7-24 is respectfully requested.

Applicants hereby authorize the Commissioner for Patents to charge Deposit Account No. 50-1078 the amount of \$54.00 to cover fees as set forth under 37 C.F.R. 1.16(b)(c).

The Examiner is invited to contact the Applicant’s representative at the below-listed telephone numbers to facilitate prosecution of this application.

Any inquiry regarding this Amendment and Response should be directed to either Pamela Lau Kee at Telephone No. (408) 345-8941, Facsimile No. (408) 345-3063 or Jeff A.

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Holmen at Telephone No. (612) 573-0178, Facsimile No. (612) 573-2005. In addition, all correspondence should continue to be directed to the following address:

Agilent Technologies, Inc.
Intellectual Property Administration
Legal Department, M/S DL429
P.O. Box 7599
Loveland, CO 80537-0599

Respectfully submitted,

Christopher L. Coleman,

By his attorneys,

DICKE, BILLIG & CZAJA, PLLC
Fifth Street Towers, Suite 2250
100 South Fifth Street
Minneapolis, MN 55402
Telephone: (612) 573-0178
Facsimile: (612) 573-2005

Date: 10/22/04
JAH:jmc

Jeff A. Holmen
Jeff A. Holmen
Reg. No. 38,492

CERTIFICATE UNDER 37 C.F.R. 1.8:

The undersigned hereby certifies that this paper or papers, as described herein, are being deposited in the United States Postal Service, as first class mail, in an envelope address to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 22nd day of October, 2004.

By Jeff A. Holmen
Name: Jeff A. Holmen